III. Earthquakes: occur when built up pressure from moving plates is released.

A. **Stress** a force that acts on rock to change its shape

or volume because stress is a force it adds energy to the rock.

B. Types of stress.

1. **Tension**: is a force which pulls on the crust, stretching rock so that

it becomes thin in the middle.

1. **Compression**: is a force which squeezes rock until it folds or breaks
2. **Shearing**: is a force that pushes a mass of rock in two opposite directions.
   1. shearing can cause rock to break and slip apart or to change its shape

C. Boundaries and Faults

1. **Transform Boundary found at Strike Slip Faults**
   1. is a place where plates move past each other by shearing
   2. shearing occurs at a strike slip fault where rocks of either side of the boundary slip past each other with little or no up and down motion.
2. **Convergent Boundary found at Reverse Faults** 
   1. is the place where plates bump into or converge with each other.

b) the compression causes a reverse fault to form.

3. **Divergent Boundaries found at Normal Faults**

1. divergent boundaries move away from each other.
2. they form a “rift” valley

D. Seismic Wave

1. Earthquakes- is the shaking and trembling that result from the

movement of rock beneath the Earth’s surface.

1. **focus**: is the area beneath the Earth’s surface where the rock

that is under stress breaks, triggering an earthquake

1. **epicenter**: is the area on the surface directly above the focus
2. **magnitude**: is a rating of the size of the earthquake based on the strength of the seismic waves and the damaged it causes.

2. Seismic Waves- carry the energy away from the focus of an

Earthquake, throughout the interior and across the surface of

the earth.

1. **P Waves**- (PRIMARY WAVES), are the first waves to arrive or be felt.
   1. P Waves compress and expand the ground like an accordion

b) **S Waves**-(SECONDARY WAVES), are the secondary waves.

* 1. S Waves vibrate from side to side as well as up and down, they shake the ground back and forth.

1. **Surface Waves**- when P waves and S waves reach the surface, some of them become surface waves
   1. Surface waves move more slowly than P and S waves.
   2. Surface waves can produce severe ground movement
   3. They can make the ground roll like ocean waves or shake buildings from side to side.

E. Measuring Earthquake

1. **Mercalli Scale** rates earthquakes according to the level of damage at a given place

1. earthquakes are rated using the Roman numerals I (little vibrations)thru XII ( great destruction)
2. the same earthquake can have different Mercalli ratings because it causes different amounts of ground

motions at different locations

**2. Richter Scale**-is a rating of an earthquakes magnitude based on the size of the Seismic waves and fault movement.

1. seismograph- an instrument that records and measures seismic

waves

1. works best with measuring small nearby earthquakes

**3. Moment Magnitude Scale**- a rating system that estimates the total

energy released by an earthquake

1. measures all types of earthquakes both near and far
2. data used for determining rating includes
   1. type of seismic waves
   2. strength of waves
   3. movement along rocks
   4. strength of rocks that broke